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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Vasel et al.
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For:	NON-LETHAL PROJECTILE FOR DELIVERING AN INHIBITING SUBSTANCE TO A LIVING TARGET
Group Art Unit:	3641
Examiner:	Tudor, H.

DECLARATION PURSUANT TO 37 C.F.R. § 1.132

Hon. Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Michael R. Wagg, declare as follows:

1. I am currently the Chief Criminal Deputy with the Douglas County Sheriff's Department, East Wenatchee, Washington. I have been in this position for about 8 years. I have 18 years of experience in law enforcement including 10 years experience in a command position. I am also the Patrol Commander for our Patrol Division and the Commander of our tactical SWAT team.

2. I have worked 12 years in the area of less-lethal and non-lethal weapons for tactical and patrol use and am considered an expert in the field of less-lethal and non-lethal weapons. I have approximately

400 to 500 hours of training in tactics and crisis intervention.

3. I am familiar with less-lethal and non-lethal weapons as an alternative to lethal weaponry. Less-lethal weapons are used to force a suspect into compliance when lethal force may or may not be warranted, but may result in death in some instances. Non-lethal weapons are used for the same purpose, but do not result in death if used properly. Both less-lethal and non-lethal weapons are used to stop or detain suspects before the situation requires deadly force.

4. Among law enforcement, there is a widely known need for a non-lethal device that can be safely and easily used by patrol officers, in many different situations. This need is also for a device that can be used quickly and effectively, and that is non-lethal if used properly.

5. I have tested and used many less-lethal and non-lethal devices, such as chemical aerosol sprays, tasers, tear gas, bean bag shotguns, and 37 mm chemical projectile launchers. Although each of these devices can be effective in specific situations, each of these devices has limited use and none of these devices are effective for everyday use by a patrol officer. In other words, these products do not satisfy the recognized need in the law enforcement community for a safe, easy to use and effective non-lethal projectile.

6. It also is well known in law enforcement that chemical agents can be very effective as a less-lethal device. For example, officers carry aerosol spray canisters (such as OC spray), tear gas (CS or CN). These devices have limitations and are useful in relatively few applications, primarily in short range use. There has been a longstanding need to provide a non-lethal device that will deliver a chemical agent or irritant that may be used in many applications that is easy to use, easy to clean up, effective, and non-lethal.

7. Since the known chemical agent non-lethals have inherent limitations and limited use in many practice situations, none of these products satisfies the need for an effective chemical agent non-lethal described above.

8. The Pepperball product, sold by Jaycor Tactical Systems of San Diego, CA, provides a solution to these longstanding needs. The Pepperball product solves the problems of the known less-lethal devices. Thus, the Pepperball product provides superior performance in many more applications. The advantages and features provided in the Pepperball product have been sought for years in the law enforcement community, and to my knowledge, until the Pepperball product was introduced, no satisfactory solution was available.

9. The Pepperball product delivers a powdered pepper substance within a frangible projectile fired by a compressed gas launcher, such as a paintball launcher. When the projectile impacts the target, the projectile

shatters releasing the powder irritant in a cloud or fog that surrounds the target, and is then inhaled by the target and/or gets into the target's eyes. Once the powder is inhaled, the suspect begins coughing and gagging and experiences a temporary inability to breathe easily. This cloud then disperses quickly, allowing the law enforcement officer to apprehend the person without requiring any special equipment, such as a mask or gloves.

10. I first became aware of the Pepperball product during the World Trade Organization (WTO) riots in Seattle, Washington in December 1999. During these riots, law enforcement employed several different types of non-lethals, such as tear gas, 37 mm kinetic projectiles, and the Pepperball product. In these riots, the Pepperball product was effectively used for crowd control and non-lethal intervention.

11. Presently, every Sergeant in our Department carries the Pepperball product. Our officers utilize the Pepperball product with a high degree of confidence that they can force a combative person into compliance without escalating the situation to the point where deadly force is required. In other words, using the Pepperball product, we have been able to effect arrest of a combative suspect from a safe distance without injury to either the officer or the suspect.

12. I believe there are several reasons why the Pepperball product is so effective. One reason the Pepperball is effective is that the product delivers a

chemical irritant to the target within a projectile. This allows an officer to launch the Pepperball product at a target from safe distances, so that the risk of harm to the officer is reduced. For example, the Pepperball product can be launched from distances of 20-30 feet, in addition to point blank range. In contrast, an officer must be in close proximity to the target when using a taser or OC spray canisters. Since the officer is in close proximity to the suspect, if the non-lethal does not work, the Officer may be forced to used deadly force if the suspect attacks.

13. Another reason the Pepperball product is effective is that the projectile itself breaks apart and can not be used back against the officers. As we witnessed in the WTO riots in Seattle in 1999, the crowds were able to utilize the bean bags and wooden dowel projectiles launched by officers. Since these projectiles remain intact after launch, they may be thrown back at or used as a weapon against the officer. This increases the risk of injury to law enforcement. On the other hand, the Pepperball product is very small and completely breaks apart into very small pieces that can not be used against law enforcement.

14. Another reason the Pepperball product is effective is that it delivers a powdered irritant. When the projectile impacts the target, the projectile shatters releasing the powdered irritant as a cloud that surrounds or encompasses the target. Thus, the target is forced to inhale the powdered irritant.

15. Since the irritant is a powder and forms a cloud, the body of the suspect can be targeted. For example, the suspect can be struck in the torso, arm, leg, shoulder, ankle and the Pepperball product still works effectively. This is because the powder immediately creates a cloud on impact that expands so that the suspect breathes the powdered irritant. In contrast, OC spray canisters must be sprayed so that the liquid irritant contacts the suspects face and/or eyes. For example, OC spray is not very effective if the suspect is sprayed on a part of the body other than the face and/or eyes. Furthermore, the liquid is a topical solution that contacts the mouth, nose and eyes of the suspect, whereas the powder is inhaled into the lungs of the suspect.

16. Since the irritant is a powder, the Pepperball does not even have to directly hit the suspect to be effective. A target proximate to the suspect can be targeted, such as a wall or ceiling near the suspect, which will form the powdered cloud. We instruct our officers to first fire the Pepperball product on the ground in front of the suspect, or on a wall next to the suspect, or on the ceiling above the suspect. Our officers have been very successful in forcing compliance with this tactic. For example, when an officer shoots the ceiling, the powder cloud literally floats down and encompasses the suspect so that the suspect must breathe the powdered irritant. In comparison, OC sprays and tasers require that the officer be in close proximity to the suspect and directly hit the suspect, thus, increasing the risk of harm to the officer.

17. The powdered irritant also quickly settles after use. For example, within a short period of time, the powdered cloud settles on the suspect or the ground. In comparison, tear gas requires a period of time before the gas has left the area. As such, officers must either wait until the gas is gone or wear gas masks. Additionally, tear gas may be blown to other areas affecting innocent persons.

18. Since the cloud quickly disperses, an officer may target a person out of a crowd and generally affect that person and only those standing nearby. Thus, an officer can put chemical irritant on a single person out of a crowd (and possibly those persons immediately next to that person), without having to put chemical irritant on the entire crowd.

19. Also, the powdered irritant easily cleans up off of the suspect. In other words, the suspect can be easily decontaminated. The powder does not stick to the suspect's skin and clothes upon use. It can simply be brushed, dusted or rinsed off of the suspect after the suspect is detained. In comparison, an aerosol or liquid OC spray sticks to the suspects face, body and clothes. As a result, officers must clean the irritant off of the suspect prior to handling the suspect or bringing the suspect to the Police Station. For example, if an officer gets the irritant on his or her hands from handling the suspect and then touches his or her eyes, the officer will be affected by the chemical agent. Thus, with chemical sprays, officers often have to flush the suspects face and eyes, and even possibly provide

medical treatment to the suspect. Again, officers might require special equipment, such as masks or gloves when handling the suspect.

20. The powder irritant is also very effective against a suspect wearing bulky clothes. For example, in colder climates, a suspect may be wearing thick, bulky clothing. In such a case, a liquid irritant must contact the suspects mouth, nose or eyes to be effective. This may be more difficult if the suspect is wearing a hat, jacket, scarf, etc. Additionally, a taser is almost completely ineffective because the taser must penetrate the suspect's skin to be effective. With thick clothing, the taser may not penetrate the layer of clothing to contact the suspect's skin. In contrast, the Pepperball product remains effective because the powder irritant forms a cloud that may be inhaled by the suspect, no matter how much clothing the suspect wears or where it contacts on the suspect or near the suspect. The powder cloud may even be inhaled through a scarf or other material covering the mouth of the suspect. Even if the suspect is wearing soft thick clothing that functions as a cushion and prevents the rupture of the Pepperball projectile, the projectiles may simply be aimed at the suspects legs or other area not covered by the soft thick clothing.

21. To my knowledge, the Pepperball product is the first non-lethal product on the market for patrol use that delivers a powdered irritant to the suspect within a projectile. Other chemical agent non-lethals involve the use of fluid irritant (OC spray) or gas irritants (tear

gas), which are not nearly as effective as the powdered irritant of the Pepperball product.

22. I am aware of 37 mm and 40 mm projectiles and launchers for tactical use that deliver a powdered irritant. However, these projectiles are fired from 37 mm launchers or other ignitable powder charge propellant launchers. Additionally, these projectiles do not break apart at impact to deliver the powder. They are designed to break through doors and window; thus, surviving the initial impact. They contain a separate charge or internal combustion that causes the projectile to explode after impact to disperse the powder. Such a projectile is a burning projectile which provides the additional risk of starting a fire and, for example, burning the suspect's home, if launched into the house. Additionally, these projectiles are not designed to be impacted with a living person since the kinetic impact may prove fatal in some situations. In contrast, the Pepperball product is launched from a compressed gas launcher, is not a burning munition, may be impacted with a living person and does not require a separate charge within the projectile to explode and disperse the powder.

23. I also believe that even if a product existed that was similar to the Pepperball projectile; however, delivered a liquid or fluid irritant, that this liquid irritant would not be nearly as effective as the powder-filled Pepperball. First, the liquid irritant would not disperse and create a cloud, like the powdered irritant. The liquid irritant would splatter and stick to the part of the suspect that is struck. In order to

be effective, the liquid product would have to hit the suspect in the face, increasing the risk of serious injury to the suspect. Also, an indirect hit would not be effective, again, since a cloud is not formed. Thus, a liquid projectile impacted with the ground or a ceiling would be entirely useless. And, the liquid irritant is more difficult to clean up since the liquid irritant soaks into the suspect's clothes and sticks to the suspect's skin. In contrast, the powdered irritant is simply brushed off of the suspect.

24. Furthermore, in our testing, we have found that a larger amount of a liquid chemical irritant from a spray canister is needed for compliance in comparison to the amount required for a powdered chemical irritant. Thus, more liquid must be applied to the suspect in order to ensure that the chemical agent will be applied to the suspects mouth and eyes. Therefore, more liquid chemical agent is embedded into the suspects clothes and on the suspect. This makes the clean up process more difficult and time consuming. This also increases the likelihood that the officer will be affected by the chemical agent. In contrast, the powdered irritant easily brushes off of the suspect and the suspect can immediately be placed into a car and taken to the police station for processing.

25. In tests we have performed, comparing liquid irritants in spray canisters and powdered irritants in the Pepperball product, the powder irritant has about 40% of the effect that the liquid irritant does

in terms of the effect of the irritant on the officer while handling and detaining the suspect.

26. Another reason I believe that the Pepperball is effective is that it may be launched from a compressed gas launcher or a modified paintball gun. This allows for easy operation and simple training. Many more officers can be trained using a paintball gun, since it does not have the recoil or kick that a bean bag shotgun provides. The training and qualification process for such shotgun and 37 mm projectile launchers is extensive.

27. Also, since the Pepperball launcher is modified paintball launcher, the Pepperballs may be launched at close range, as well as long range. Generally, the kinetic impact of the Pepperball is much less than that provided by a bean bag gun. For example, a bean bag gun provides a kinetic impact of about 120 ft-lbs, whereas the Pepperball gun provides about 8-12 ft-lbs of kinetic impact. Therefore, the Pepperball product is safe to launch, even at point blank range.

28. The kinetic impact provided by a direct hit also assists in the effectivity since enough kinetic energy is provided to stun the suspect without seriously injuring the suspect. This impact tends to stop or slow the suspect, so that the powder is more likely to be inhaled by the suspect.

29. The fact that the projectile provides a kinetic impact when the suspect is targeted also

increases the effectivity of the powder. In testing, we have found that when a person is struck by the Pepperball Product, the kinetic impact causes the person to instinctively take a quick breathe in right after impact. Thus, as the powder cloud is encompassing the suspect, the suspect involuntarily inhales the irritant. Our department has conducted tests where we have instructed the persons being shot to specifically try not to breath in on impact. In every test, the person immediately inhaled a breathe of irritant after being impacted with 3-4 projectiles in a very short period of time.

30. When targeting the body of the suspect, in particular the chest of the suspect, the kinetic impact also causes the suspect to contort their body; thus, bringing their face into the expanding cloud and improving effectivity. A liquid-filled projectile would not take advantage of the fact that the suspects face is brought closer to the suspect's chest since the liquid does not form a cloud for the suspect to inhale, the liquid simply splatters on the suspects clothes in a localized spot. Also, the liquid irritant needs to be washed away from the suspects' clothes and skin.

31. I am not aware of another product, other than the Pepperball product, that safely combines both kinetic impact and a powdered chemical agent in the same device.

32. The compressed gas launchers for use with the product allow for rapid firing of the projectiles. For example, several projectiles may be fired per second.

This provides an enhanced kinetic impact on the suspect, as well as increases the size of the powder cloud. In contrast, many known devices can only be fired once (e.g., the taser) or at a limited rate (e.g., bean bag shotgun projectiles).

33. As a result of the many features of the Pepperball product, I believe that in the proper use, the Pepperball projectile is truly non-lethal, as opposed to less-lethal. This is due to the fact that the primary agent, oleoresin capsicum, has proven non-lethal. Also, since the projectile is launched from a compressed gas launcher, the projectile is impacted with significantly less force that gun powder ignited projectiles.

34. In comparison to the known less-lethal and non-lethal devices, the Pepperball product fills the well recognized need in law enforcement for a less-lethal/non-lethal device that has many applications, is easy to use, and is effective.

35. In comparison to known chemical agent non-lethal devices, the Pepperball product satisfies the well recognized need in law enforcement to provide a non-lethal that delivers a chemical irritant that may be used in many applications, is easy to use, and is effective, without impacting the officers and with easy decontamination of the suspect.

36. At the Douglas County Sheriff's Department, we have been very pleased with the results of the Pepperball product. In use, the Pepperball product

has been very effective in a variety of situations. Due to the Pepperball product's effectivity, we plan to continue the use of the Pepperball product and increase the number of Pepperball launchers in use by our officers.

37. I am not aware of any other projectile devices on the market for patrol use other than the Pepperball product, that use an inhibiting substance in powder form. Other products delivering an inhibiting substance are liquid-based, and are not nearly as effective as the Pepperball product.

38. I have reviewed a copy of U.S. Patent No. 5,361,700 (the Carbone patent) provided by the Examiner in the patent application relating to the Pepperball product.

39. In particular, I have reviewed the portion of the Carbone patent that is said to describe the invention. This portion describes "thin-walled balls containing substances that are ejected upon impact of the fired ball, such as marking dyes, or paints or irritants, such as pepper or teargas or the like". I have reviewed this passage in light of the description in the Carbone patent and in light the knowledge of those in law enforcement at the time the Carbone patent was wirtten and issued.

40. The Carbone projectile is for use in riot and crowd control by law enforcement personnel. As is well accepted in the art today, the term "pepper" refers

to an irritant in a liquid or aerosol form, such as used in pepper spray or mace. This liquid irritant is often contained under pressure with a gas and released as a spray. The term Pepper is generally understood to refer to an irritant that is a liquid or fluid, not a powder.

41. Furthermore, Carbone only specifically describes projectiles containing liquids or gases, not powders. Thus, as described in the Carbone patent, it is my opinion that the irritant pepper refers to a liquid, not a powder.

42. The Carbone patent was filed December 10, 1993 and issued November 8, 1994. At that time, to the best of my knowledge, there were no less-lethal devices for law enforcement using a powdered pepper as an irritant. Thus, at the time the Carbone patent was written, the term pepper clearly means a liquid substance.

43. Therefore, as described in the Carbone patent, and given its meaning in law enforcement at the time the Carbone patent was written and issued, and at the present time, it is my opinion that the term "pepper" refers to a liquid or aerosol substance, not a powder.

44. As I am advised I must, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by

fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patents issuing thereon, or any patent to which this Declaration is directed.

Michael R. Wagg

Dated: 7-17-01, 2001

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